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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,741	10/22/2001	Shin-Ichi Yamaguchi		6398

7590 03/10/2004

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EXAMINER

GOFF II, JOHN L

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/032,741

Applicant(s)

YAMAGUCHI ET AL.

Examiner

John L. Goff

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,4,5 is/are pending in the application.
- 4a) Of the above claim(s) 5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2 and 4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the amendment filed on 12/8/03. All previous objections to the specification and claims have been overcome.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wood (U.S. Patent 5,733,399) in view of Straughan (U.S. Patent 3,455,758) and either one of Ganser (U.S. Patent 3,834,257) or Bliss (U.S. Patent 3,964,846).

Wood discloses a method for manufacturing a drive belt. Wood teaches the method comprises providing an expandable mandrel, i.e. a core mold comprising a diaphragm expandable by pneumatic pressure, placing on the mandrel a lay-up comprising a top elastomer (i.e. rubber) sheet, a barrier layer (e.g. plastic or elastomer film), a tooth stock elastomer sheet, belt cords, and a top tooth facing fabric, placing the expandable mandrel within an outer casing mold, and applying heat and pneumatic pressure to vulcanize the elastomer sheets and adhere all of the components together (Figures 1 and 7-10 and Column 1, lines 30-34 and Column 2, lines 62-65 and Column 5, lines 43-45 and Column 6, lines 65-67 and Column 7, lines 1-7). Wood does not specifically recite the ends of each component as abutted together. However, it appears it is intrinsic to Wood that the ends are abutted together to form an endless drive belt having the same dimensions, e.g. thickness, throughout. In any event it would have been obvious to one of

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ordinary skill in the art at the time the invention was made to place the ends of the components on the mandrel taught by Wood in an abutting relationship to form an endless drive belt having accurate dimensions throughout as was well known in the art as shown for example by Straughan. Further, Woods does not specifically recite forming the lay-up prior to placing the components on the mandrel. However, it would have been well within the purview of one of ordinary skill in the art at the time the invention was made to form the lay-up prior to placing the components on the mandrel as this was a well-known technique in the art for providing a belt lay-up (e.g. for reasons such as forming belts of different internal diameters) as shown by either one of Ganser or Bliss.

Straughan disclose a method for manufacturing an endless belt, e.g. a drive belt.

Straughan teaches, "In such belts and in other similar products it is necessary that the belt surface be free from surface discontinuities such as are presented by lap joints such as exist when a sheet of polyester is wrapped several times around a mandrel or other support. The present invention provides a method for fabricating a tube or endless belt of Mylar (polyethylene terephthalate) polyester which is of uniform thickness throughout its length, which belt consists of two pieces of polyester wrapped one inside the other with their respective ends abutted as butt joints, diametrically opposite to one another" (Emphasis added) (Column 1, lines 31-42).

Ganser disclose a radially expandable and contractible mandrel (i.e. a work-piece holder) used in the construction of transmission or conveyor belts wherein the belts are supplied onto the mandrel as a tubular blank (i.e. the belt is not built up directly on the mandrel) such that belts having a range of internal diameters can be formed (i.e. as opposed to forming only belts having

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internal diameters equal to that of the mandrel) (Column 1, lines 4-6 and 9-15 and Column 2, lines 47-48 and Column 3, lines 30-31 and Column 4, lines 50-57 and 64-66).

Bliss is directed to an apparatus for manufacturing endless belts, e.g. power transmission belts. Bliss teaches a cylindrical vulcanizing mold comprising an inner core mold comprising a diaphragm expandable by pneumatic pressure and an outer casing mold comprising a diaphragm expandable by pneumatic pressure. Bliss teaches forming a belt sleeve (i.e. a tubular preform) comprising at least one rubber layer and at least one tensile reinforcement layer (substrate with small stretchability), positioning the belt sleeve around the inner core of the vulcanizing mold, closing the mold, and applying heat and pneumatic pressure (via the diaphragms) to vulcanize the rubber layer and form an endless belt (seamless cylinder) (Figures 1 and 2 and Column 1, lines 36-41, 43-45, and 48-50 and Column 2, lines 46-49 and 58-60 and Column 3, lines 37-41, 43-45, 54-56, 62-64, and 66-67 and Column 4, lines 6-8, 28-61, 37-39, and 45-47 and Column 5, lines 24-27).

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wood, Straughan, and either one of Ganser or Bliss as applied above in paragraph 3, and further in view of Fujiwara et al. (U.S. Patent 5,630,770).

Wood, Straughan, and either one of Ganser or Bliss teach all of the limitations in claim 4 as applied above except for a teaching of forming additional coating layer(s) on the outer surface, i.e. top tooth facing, of the endless belt. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form on the outer surface of the endless drive belt taught by Wood as modified by Straughan and either one of Ganser or Bliss a coated layer of silicon or fluorine resin as it was well known in the art to apply a coating of silicon or fluorine

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resin to the outer surface of an endless drive belt to reduce both the coefficient of friction of the outer surface and wear on the outer surface as shown for example by Fujiwara et al.

Fujiwara et al. disclose coatings, e.g. silicon or fluorine resins, applicable to the outer surface of an endless drive belt for reducing both the coefficient of friction of the outer surface and wear on the outer surface (Column 1, lines 7-12 and Column 2, lines 27-32 and Column 8, lines 49-57).

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ndebi et al. (U.S. Patent 6,217,964) in view of Bliss (Bliss is described above in paragraph 3) and optionally Ganser (Ganser is described above in paragraph 3).

Ndebi et al. disclose a method for manufacturing an endless, seamless image transfer belt. Ndebi et al. teach a method comprising providing a mandrel, placing on the mandrel a lay-up comprising an elastomer base ply, i.e. rubber sheet, and an endless, seamless plastic film with both substrates having their ends in an abutting relationship, wrapping the mandrel in a plastic sheet, i.e. outer casing mold, applying heat and pressure to vulcanize the elastomer sheet and adhere the elastomer base ply to the plastic film to form an endless, seamless belt, and unwrapping the outer plastic sheet to remove the belt (Figures 2, 6, and 7 and Column 5, lines 53-60 and Column 6, lines 6-9, 20-22, and 44-48). Ndebi et al. do not specifically recite using an outer casing mold having a pneumatic chamber (i.e. a diaphragm) for applying pressure. However, it would have been well within the purview of one of ordinary skill in the art at the time the invention was made to use as the outer casing mold taught by Ndebi et al. an outer casing mold having a pneumatic chamber as this was a well known alternative in the art for applying vulcanization and adhering pressure when forming a belt as shown for example by Bliss

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and only the expected results would be achieved. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the outer casing mold taught by Ndebi et al. an outer casing mold having a pneumatic chamber as shown for example by Bliss as the mold taught by Bliss is reusable as opposed to the disposable wrapping taught by Ndebi et al. Additionally, it is noted Ndebi et al. do not specifically recite forming the lay-up prior to placing the components on the mandrel. However, it would have been well within the purview of one of ordinary skill in the art at the time the invention was made to form the lay-up prior to placing the components on the mandrel as this was a well-known technique in the art for providing a belt lay-up (e.g. for reasons such as forming belts of different internal diameters) as shown for example by Bliss and the optional reference to Ganser.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ndebi et al., Bliss, and optionally Ganser as applied above in paragraph 5, and further in view of Shindo et al. (U.S. Patent 5,140,375).

Ndebi et al., Bliss, and optionally Ganser teach all of the limitations in claim 4 as applied above except for a teaching of forming additional coating layer(s) on the outer surface of the endless belt. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form on the outer surface of the endless belt taught by Ndebi et al. as modified by Bliss and optionally Ganser a coated layer of fluorine resin as it was well known in the art to apply a coating of fluorine resin to the outer surface of an endless belt to reduce the friction resistance of the outer surface.

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Shindo et al. disclose coatings, e.g. fluorine resin, applicable to the outer surface of an endless drive belt for reducing the friction resistance of the outer surface (Column 6, lines 51-59).

Response to Arguments

7. Applicant's arguments filed 12/8/03 have been fully considered but they are not persuasive. In response to applicants request for references, the 35 USC 103 rejection over Wood has been modified with references to Straughan (U.S. Patent 3,455,758) (to show the abutting step) and Ganser (U.S. Patent 3,834,257) and Bliss (U.S. Patent 3,964,846) (to show forming the lay-up prior to placing the components on the mandrel).

Applicant argues "Wood does not teach or suggest the abutting step" and "If the Examiner persists in this aspect of the rejection, he is respectfully requested to supply a reference or an affidavit as to his personal knowledge as required by 37 CFR 1.104(d), as to the abutting step..."

As previously set forth, it appears it is intrinsic to Wood that the ends are abutted together to form an endless drive belt having the same dimensions, e.g. thickness, throughout (as the belt taught by Wood has no discontinuities). In any event it would have been obvious to one of ordinary skill in the art at the time the invention was made to place the ends of the components on the mandrel taught by Wood in an abutting relationship to form an endless drive belt having accurate dimensions throughout. Straughan is now cited in response to applicants request for a reference showing this well known technique of abutted ends for forming a belt having the same thickness throughout.

Applicant further argues "Wood does not teach or suggest ... the step of applying pneumatic pressure to both vulcanize the rubber sheet and adhere the rubber sheet to the substrate film to form a one piece laminated cylinder." "More specifically,

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Wood does not teach or suggest applying pneumatic pressure to the cylindrical composite for vulcanizing the rubber sheet and for adhering the rubber sheet to the substrate film to form a one piece laminated cylinder. Wood teaches a pressing means for pressing the slab or uncured belt 38 against the mold rings 12 is an inflatable diaphragm 40 (Wood, col. 5, lines 40-43). Thus, Wood does not teach the claimed step as recited above.” and “Thus, one of ordinary skill in the art would not find the motivation in Wood to modify Wood to arrive at the present invention, especially since Wood teaches away from the use of compression molding, stating that transfer molding process is a key feature of the invention (Wood, col. 6, lines 45-47).”

It is noted Wood teaches a lay-up comprising at least a rubber sheet and a seamless substrate film (the layers are not yet adhered to each other). Wood further teaches vulcanizing (and thus, adhering) the lay-up to form a belt composite in an apparatus wherein vulcanization pressure is applied to the lay-up through a diaphragm that is inflated by way of a fluid such as air, steam or hot water (Column 5, lines 43-45). Thus, Wood clearly teaches the use of pneumatic pressure during vulcanizing (and thus, adhering) the lay-up to form a belt.

Applicant further argues “The conclusion that to form the lay-up prior to placing the components on the mandrel is obvious to one of ordinary skill in the art is not based on any reference cited of record and is not derived from the teaching or motivation from Wood. The reference must provide an objective reason or desirability to modify the teaching of the reference MPEP 2143. The teaching to modify Wood is from Applicant's disclosure, not the Wood reference, and thus is improper.” and “If the Examiner persists in this aspect of the rejection, he is respectfully requested to supply a reference or an affidavit as to his personal knowledge as required by 37 CFR 1.104(d), as to the ... the lay-up prior to placing the components on the mandrel.”

As previously noted, it would have been well within the purview of one of ordinary skill in the art at the time the invention was made to form the lay-up prior to placing the components on the mandrel as this was a well-known technique in the art for providing a belt lay-up. Ganser and Bliss are now cited in response to applicants request for a reference showing this well known technique.

Applicant further argues “Thus, Ndebi does not disclose the claimed steps of applying pneumatic pressure to both vulcanize the rubber sheet abutting at its ends, and

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adhere the rubber sheet to the seamless substrate film.” and ““Applicants, again respectfully request the Examiner to supply a reference or an affidavit as to his personal knowledge as required by 37 CFR 1.104(d) as to the outer casing mold having a pneumatic chamber for applying pressure, and forming the lay-up prior to placing the components on the mandrel.” and “Bliss does not remedy the deficiencies of Ndebi.” and “More specifically, the Bliss reference discloses the uncured belt sleeve is vulcanized under steam pressure after it is manufactured in a conventional manner. However, Bliss does not disclose a lamination that is executed during the vulcanization. The Bliss reference (col. 3, lines 37-41) states that the belt to be cured is first built up in the usual manner as a belt sleeve. No seamless film is disclosed to which a solid rubber sheet is adhered while at the same time vulcanizing the sheet ends together to form an endless belt, as in the claimed invention.”

It is noted the Examiner agrees Ndebi does not disclose the step of applying pneumatic pressure or forming the belt lay-up prior to placing the components on the mandrel. However, the combination of Ndebi and Bliss for the reasons given above does disclose these claimed steps. Bliss teaches an outer casing molding having a pneumatic chamber for applying vulcanization pressure, and Bliss shows applying the belt lay-up as a preform it being noted Ganser has been optionally cited as a further teaching of this technique. As to applicants arguments that Bliss does not disclose a laminating that is executed during vulcanization, it is noted that Bliss teaching forming a belt from a lay-up (i.e. more than one layer) that is vulcanized to form a composite (i.e. each layer is cured and thus adhered to one another to form a single composite) in an apparatus comprising at least an outer casing mold having a pneumatic chamber for applying vulcanization pressure.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John L. Goff** whose telephone number is **(571) 272-1216**. The examiner can normally be reached on M-F (7:15 AM - 3:45 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John L. Goff
February 24, 2004



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PRIMARY EXAMINER
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